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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/517,341

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Kenneth K. Li

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EXAMINER

MAY, ROBERT J

ART UNIT

PAPER NUMBER

2885

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/07/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/517,341

Applicant(s)

LI, KENNETH K.

Examiner

Robert May

Art Unit

2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 16-44 is/are rejected.
- 7) ☒ Claim(s) 14 and 15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/9/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.

The “five triangular input light pipes”, “five four faced prisms” and the “five sided output light pipe” as required by Claim 15 must be shown or cancelled from the claims.

The “plurality of lenses” as required by Claim 16 must be shown or the feature(s) canceled from the claim(s).

No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 11 is objected to because on line 24 "arrange" should be replaced by – arranged- and "DNR" should be replaced by –DPR-.

Claims 23-24, 26-27, 32 and 42 are objected to because "paraboloid" should be – paraboloid-

Claim 41 is objected to because "said plurality of combination means" lacks antecedent basis and on line 10 "output" should be –outputting-.

Claim 44 is objected to because "said reflector means" lacks antecedent basis. Claim 44 is construed to mean the focusing means reflects light from the light means to the collecting means. Claim 44 is unclear because of the antecedent basis issues. The Examiner construes the reflector means to mean light means when read in light of the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 23-25, 39, 42 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Li (6,231,199).

Regarding Claim 1, Li discloses in Figure 3B, a lamp illumination system comprising a plurality of lamps 31a, 31b, a plurality of first light reflectors 32a, 32b, a plurality of second light reflectors 35, 35a, 33, 33a an output light guide I (disclosed as a light guide Col 3, lines 60-67), wherein each of the first light reflectors 32a, 32b are seen to be arranged to reflect light output from one of the plurality of lamps 31a, 31b, onto an input of one of said plurality of second reflectors 35, 35a, 33, 33a, each of said plurality of second light reflectors is arranged to direct light from an output of one of said first light reflectors 32a, 32b onto an input of said output light guide I such that the light outputs of the plurality of lamps is combined into a single output (output target Abstract).

Regarding Claim 2, Li '199 discloses that elliptical reflectors have been used to maximize the brightness on a target (Col 1, lines 16-20).

Regarding Claims 3 and 23, Li '199 discloses at least one of the plurality of first light reflectors comprise a dual paraboloid reflector 32a, 32b (Col 3, lines 8-12).

Regarding Claims 23-24, Li '199 alternatively discloses in Figure 4, a lamp illumination system comprising a plurality of dual paraboloid reflector systems wherein each comprises a lamp 41a, 41b, a retro-reflector 44, a dual paraboloid reflector 42a, 42b, wherein said lamp 41a is disposed between said retro-reflector 44 and said dual paraboloid reflector 42a and each output is focused onto the input of one of plurality of reflectors 45, 43, further comprising a light guide (I) wherein the light is focused onto the

input of the light guide (l) such that the outputs of each dual paraboloid reflector system (42a, 41a, 44 and 42b, 41b) are combined into a single output (output target, Abstract).

Regarding Claim 25, Li '199 discloses in Figure 4, each output side of each DPR system (42a, 41a, 44 and 42b, 41b) face each other.

Regarding Claim 39, Li '199 discloses in Figure 5, an illumination system comprising a plurality of light means 51a, 51b, 51c, a plurality of collecting means 52a, 52b, 52c, collecting and focusing the light from each lighting means 51a, 51b, 51c and a combination means (55, 53 l) for combining the collected light from the collecting means and combine the collected light into a single output (combined together to be inputted to a target such as a single core optical fiber and other optical light guides Col 2, lines 21-23).

Regarding Claim 42, Li discloses in Figure 5, the plurality of light means as comprising dual paraboloid reflector means (cascading paraboloid reflectors 52a, 52b, 52c Col 5, lines 55-58).

Regarding Claim 43, Li discloses in Figure 5, the collecting means as reflectors (as shown) for reflecting light from the light means to the collecting means (light is reflected to reflector pairs 52a,b,c as shown by light paths)

Claims 1 and 4-7, 12-13, 17-18, 21-23, 26 and 39-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Jeong (5,852,693).

Regarding Claims 1 and 23, Jeong discloses in Figure 5, a lamp illumination system comprising a plurality of lamps 13, a plurality of first light reflectors 14, a plurality

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of second light reflectors (reflecting surfaces 7 of element 3), an output light guide 11 and the output of the plurality of first light reflectors are combined into a single output. The light output from each first and second lamp 13 is reflected by the first and second reflector 14 onto inputs of first and second light guides 2 and arranged to direct light from the input light guides to the input of said output light guide 11 that is combined into a single output.

Regarding Claim 4, Jeong discloses in Figure 5 a plurality of input light guides 2 arranged to input light into an input of an output light guide 11 so that the outputs of each of the plurality of light guides 2 is combined into a single output.

Regarding Claim 5, Jeong discloses in Figure 5, a plurality of lamps 13 wherein the plurality of light reflectors consists of first and second dual paraboloid reflectors (each reflector 14 is parabolic in shape Col 7, line 47), said plurality of input light guides 2 consist of first and second input light guides 2 and said plurality of second light reflectors 7 consist of first and second prisms (Col 2, line 30).

Regarding Claim 6, Jeong discloses in Figure 5, the prisms 3 as being identical 90-degree prisms.

Regarding Claim 7, Jeong discloses in Figure 5 the first and second lamps 13 as comprising the same type of lamp (mercury lam Col 8, lines 16-17).

Regarding Claim 12, Jeong discloses the first and second prisms as each dividing the input of each light guide equally (the prisms 3 and light guides 2 are disclosed as being symmetrical to the optical axis of the light guide 11, therefore the prisms are seen to divide the input equally to the output light guide).

Regarding Claim 13, Jeong discloses in Figure 5, the output light guide 11 as divided amongst first and second output sides of first and second prisms 3.

Regarding Claim 17, Jeong discloses in Figure 5, gaps disposed between said first and second input light guides 2 and first and second prisms 3.

Regarding Claim 18, Jeong discloses in Figure 5, gaps 18, (gap filled with gas, Col 2, lines 63-65) between the prisms 3 and output light guide 11.

Regarding Claims 21-22, Jeong discloses the interface 18 or 12 comprising no gaps (hard cement filling the interface Col 2, lines 63-65).

Regarding Claim 26, Jeong discloses in Figure 5, plurality of input light guides 2 whereby said plurality of DPR systems 14 is arranged to generate and focus light onto an input of one of said plurality of input light guides and the output of the input light guides 2 into an input of said output light guide 11.

Regarding Claim 39, Jeong discloses in Figure 5, a lamp illumination system comprising a plurality of light means 13, a plurality of collecting means 14 for focusing the light from said light means 13 and a combination means 3 for combining the light from the collecting means and combine into a single output

Regarding Claim 40, Jeong discloses in Figure 5, he collecting means comprising reflectors 14 for reflecting the light onto the light guide means 2.

Regarding Claim 41, Jeong discloses in Figure 5 the combination means as comprising a reflector means (prism 3 that reflects light) that reflects light from the light guide means 2 into a single output means (into light guide 11).

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Regarding Claims 39 and 42, Jeong alternatively discloses in Figure 5, the lighting means 13 14 comprising a plurality of dual paraboloid reflector means 14 for generating a single light output (into each light guide 2).

Regarding Claim 43, Jeong discloses the collecting means 14 as being a reflector.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-10 rejected under 35 U.S.C. 103(a) as being unpatentable over Jeong in view of Li '199.

Regarding Claim 8, Jeong fails to disclose first lamp as comprising a different type of lamp than said second lamp. Li '199 discloses in Figure 3b a system comprising two lamps and that it would be advantageous to have two different types of lamps so that the combination of the lamps (each being energy efficient yet unsuitable alone for illumination purposes) can produce a white light for illumination purposes (Col 6, lines 29-36). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Jeong with the two different lamp types as taught by Li '199 so that the combination of light can produce a white light.

Regarding Claim 9, Jeong fails to disclose the light guides as being tapered light guides. Li '199 discloses the light guides as being tapered so that the cross sectional area of the light can be narrowed or widened. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the light guide of Jeong with the tapered light guides as taught by Li '199 so that the cross sectional area of the light emitted can be narrowed or widened.

Regarding Claim 10, Jeong discloses in Figure 5 the plurality of light guides 2 as being straight.

Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeong in view of Rizkin (5,842,767). Jeong fails to disclose the use of clear epoxy for filling the gaps. Rizkin discloses the use of epoxy that is clear (high optical transmittance) which is a preferable material to use for use with fiber optic because it is transparent and heat resistant (Col 13, lines 58-64). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Jeong with the epoxy of Rizkin because it is transparent and heat resistant.

Claims 11, 27-30, 33-34 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeong in view of Matsushita (JP 08-031382).

Regarding Claims 11 and 27, Jeong fails to disclose a first and second retro-reflector arranged to reflect light from first and second lamps into said first and second

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DPR and the lamp disposed between the retro-reflector and the dual paraboloid reflector. Matsushita discloses in Figure 1, a lighting system comprising retro-reflector 15 for effectively utilizing light emitted from a light emitting tube (English Abstract). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Jeong with a retro-reflector as taught by Matsushita for effectively utilizing the light emitted from a light emitting tube.

Regarding Claim 28, Jeong discloses in Figure 5, the first and second DPR system is arranged such that the output of the first and second DPR face one another.

Regarding Claim 29 Jeong discloses in Figure 5, the input light guides 2 each receiving light from each DPR 14 and as being parallel to each other and orthogonal to the output light guide 11.

Regarding Claim 30, Jeong discloses Figure 5, the first and second prism 3 each receiving light from the first and second input light guide 2 respectively and the first and second prism are arranged adjacent to one another to cover the input area of the output light guide 11.

Regarding Claim 33, Jeong discloses in Figure 5, gaps disposed between said first and second input light guides 2 and first and second prisms 3.

Regarding Claim 34, Jeong discloses in Figure 5, gaps 18, (gap filled with gas, Col 2, lines 63-65) between the prisms 3 and output light guide 11.

Regarding Claim 44, Jeong fails to disclose a focusing means reflecting light from the light means 13 to the collecting means 14. Matsushita discloses in Figure 1, a lighting system comprising a focusing means 15 for effectively utilizing light emitted from

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a light means 2 (small reflector, English Abstract) that is sent to a collecting means 9 (large reflector). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Jeong with a focusing means as taught by Matsushita for effectively utilizing the light emitted from a light emitting tube or light means.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jeong and Matsushita as applied to claim 30 above, and further in view of Li '199. Jeong discloses in Figure 5, the prisms 3 having an area that is approximately equal to one half the area of the input of the output light guide 11. Jeong fails to disclose the first and second input light guides 2 as being tapered narrowing from the output side to the input side and having the output side be approximately the same area as the input side of the first and second prisms. Li '199 discloses light guides as being tapered for adapting the size or light emitted by the light source. It would have been obvious to have the output of each input light guide be approximately the same as the area of the input side of the prism so that all of the light in the light guide is transmitted to and reflected by the prism. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the light guides of Jeong with the tapered light guides of Li '199 so that all of the light is transmitted and reflected by the prism and the input side of the light guide adapts to the size of the light source or light emitted by the light source.

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Claims 35-36 and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeong and Matsushita as applied to claims 33, 34, and 30 above respectively, and further in view of Rizkin.

Regarding Claims 35-36, Jeong fails to disclose the use of clear epoxy for filling the gaps. Rizkin discloses the use of epoxy that is clear (high optical transmittance) which is a preferable material to use for use with fiber optic because it is transparent and heat resistant (Col 13, lines 58-64). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Jeong with the epoxy of Rizkin because it is transparent and heat resistant.

Regarding Claims 37-38, Jeong discloses the interface between the input light guides 2 and the prisms 3 and the prisms and output light guide as comprising no gaps (hard cement filling the interface 12 and 18, Col 2, lines 63-65).

Claims 16 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li '199 in view of Moss (6,341,876). Li '199 fails to disclose a plurality of lenses disposed between said plurality of lamps and said plurality of first light reflectors. Moss discloses in Figure 7 and 9, an illumination system having a plurality of lenses 713, 715 for focusing the light onto an input face (Col 7, lines 30-33). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Li '199 with the lenses of Moss to focus light onto an input face.

Allowable Subject Matter

Claims 14-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding Claim 14, the prior art does not teach or show the second light reflectors comprising four-faced prisms and the output light guide comprising triangular output light pipes.

Regarding Claim 15, the prior art does not teach or show the second reflectors comprising five four faced prisms and the output light guide comprising five sided output light pipe.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert May whose telephone number is (571) 272-5919. The examiner can normally be reached between 9 am– 5:30pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong (James) Lee can be reached on (571) 272-7044. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300 for all communications.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval PAIR system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RM

1/18/07



RENEE LUEBKE
PRIMARY EXAMINER